

We will add fractions with unlike denominators.

CFU

What are we going to do?

Activate Prior Knowledge

The **least common denominator (LCD)** is the lowest multiple shared by a set of **denominators**.

Find the least common denominator of the fractions below.

$$1. \frac{1}{2}, \frac{1}{5}$$

$$2. \frac{2}{3}, \frac{1}{2}$$

Fraction $\frac{2}{3}$ → numerator
→ denominator

Make Connection

Students, you already know how to find the least common denominator of fractions. Now, we will use that skill to add fractions with unlike denominators.

Common Core Standard 7.NS.1 & 7.NS.2 Prerequisite Skills

Apply and extend previous understandings of addition, subtraction, multiplication, and division of integers (AND other rational numbers); Students will reinforce skills learned in 6th grade.

We will subtract fractions with unlike denominators.

CFU

What are we going to do?

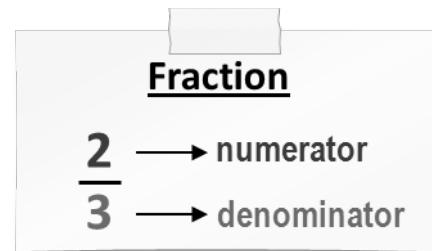
Activate Prior Knowledge

The **least common denominator (LCD)** is the lowest multiple shared by a set of **denominators**.

Find the least common denominator of the fractions below.

$$1. \frac{1}{2}, \frac{1}{3}$$

$$2. \frac{3}{5}, \frac{1}{2}$$



Make Connection

Students, you already know how to find the least common denominator of fractions. Now, we will use that skill to subtract fractions with unlike denominators.

Common Core Standard 7.NS.1 & 7.NS.2 Prerequisite Skills

Apply and extend previous understandings of addition, subtraction, multiplication, and division of integers (AND other rational numbers); Students will reinforce skills learned in 6th grade.

Fractions with unlike denominators have a different number of equal parts.

Fractions with like denominators have the same number of equal parts.

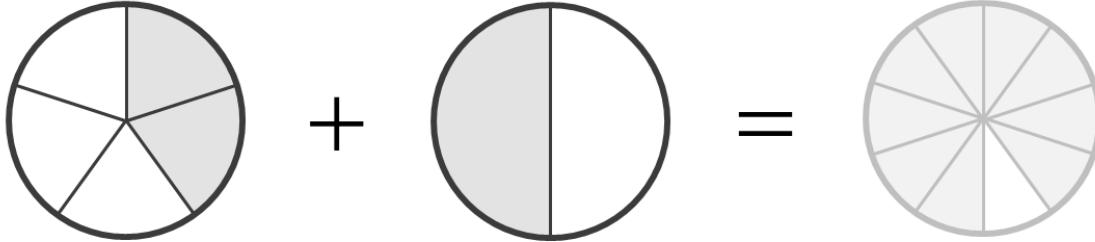
To **add fractions**, both fractions must have **like denominators**.

- To add fractions with unlike denominators use the least common denominator (LCD) to create equivalent fractions with like denominators.

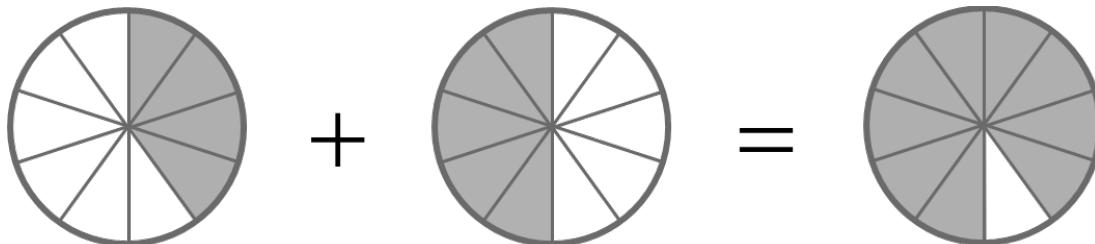
Fraction

$\frac{2}{3}$ → numerator
→ denominator

Adding Fractions with Unlike Denominators



$$\frac{2}{5} + \frac{1}{2} =$$



$$\frac{4}{10} + \frac{5}{10} = \frac{9}{10}$$

Equivalent Fractions

The **LCD** of $\frac{2}{5}$ and $\frac{1}{2}$ is **10**.

$$\frac{2}{5} \times \frac{2}{2} = \frac{4}{10} \quad \frac{1}{2} \times \frac{5}{5} = \frac{5}{10}$$

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Which pair of fractions is ready to be subtracted? How do you know?

A $\frac{2}{3} + \frac{2}{5} =$

B $\frac{2}{3} + \frac{1}{3} =$

In your own words, how do you add fractions with unlike denominators? "To add fractions with unlike denominators _____."

Vocabulary

¹ equal value

Fractions with unlike denominators have a different number of equal parts.

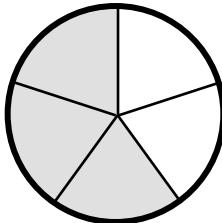
Fractions with like denominators have the same number of equal parts.

To **subtract fractions**, both fractions must have **like denominators**.

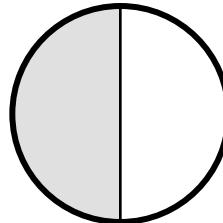
- To subtract fractions with unlike denominators use the least common denominator (LCD) to create equivalent fractions with like denominators

Subtracting Fractions with Unlike Denominators

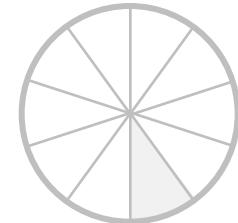
$$\frac{3}{5} - \frac{1}{2} =$$



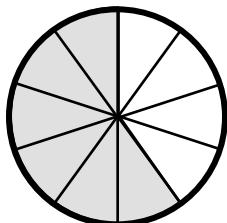
$$-$$



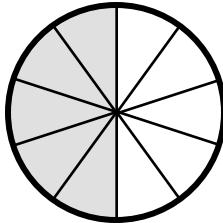
$$=$$



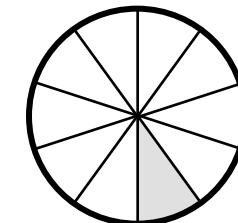
$$\frac{6}{10} - \frac{5}{10} = \frac{1}{10}$$



$$-$$



$$=$$



Equivalent Fractions

The **LCD** of $\frac{3}{5}$ and $\frac{1}{2}$ is **10**.

$$\frac{3}{5} \times \boxed{\frac{2}{2}} = \frac{6}{10} \quad \frac{1}{2} \times \boxed{\frac{5}{5}} = \frac{5}{10}$$

CFU

Which pair of fractions is ready to be subtracted? How do you know?

A $\frac{2}{3} - \frac{2}{5} =$ B $\frac{2}{3} - \frac{1}{3} =$

In your own words, how do you subtract fractions with unlike denominators?

"To subtract fractions with unlike denominators _____."

To **add fractions**, both fractions must have **like denominators**.

Add fractions with unlike denominators.

- ① Find the least common denominator. Hint: Find the lowest shared multiple.
- ② Create equivalent fractions with like denominators.
Hint: Use the least common denominator.
- ③ Add fractions. Hint: Add the numerators, keep the denominators the same.
- ④ Interpret³ the sum. "_____ plus _____ equals _____."

1. $\frac{1}{2} + \frac{1}{3} =$

2. $\frac{1}{2} + \frac{2}{5} =$

3. $\frac{3}{4} + \frac{1}{12} =$

4. $\frac{4}{8} + \frac{1}{6} =$

CFU

- 2 How did I/you find the least common denominator?
- 3 How did I/you create equivalent fractions?
- 4 How did I/you add fractions?

Vocabulary

- ² answer to an addition problem
³ explain

To **subtract fractions**, both fractions must have **like denominators**.

Subtract fractions with unlike denominators.

- ① Read the problem and identify₁ fractions, if necessary. (circle)
- ② Find the least common denominator. Hint: Find the lowest shared multiple.
- ③ Create equivalent₂ fractions with like denominators.
Hint: Use the least common denominator.
- ④ Subtract fractions. Hint: Subtract the numerators, keep the denominators the same.
 - a Reduce the difference₃, if possible.
- ⑤ Interpret₄ the difference. “____ minus ____ equals ____.”

1. $\frac{1}{2} - \frac{1}{3} =$

2. $\frac{1}{2} - \frac{2}{5} =$

3. $\frac{3}{4} - \frac{1}{12} =$

4. $\frac{4}{8} - \frac{1}{6} =$

CFU

- 2 How did I/you find the least common denominator?
- 3 How did I/you create equivalent fractions?
- 4 How did I/you subtract fractions?

Vocabulary

- ¹ find (synonym)
- ² equal value
- ³ answer to a subtraction problem
- ⁴ explain

To add fractions, both fractions must have **like denominators**.

Solving Math Problems

- 1 Determine what the question is asking.**
- 2 Determine the math concept required.**
- 3 Determine relevant information.**
- 4 Solve the problem, then interpret the answer.**
- 5 Check the reasonableness of your answer.**

Add fractions with unlike denominators.

- 1** Find the least common denominator.
Hint: Find the lowest shared multiple.
- 2** Create equivalent fractions with like denominators.
Hint: Use the least common denominator.
- 3** Add fractions.
Hint: Add the numerators, keep the denominators the same.
- a** Reduce the sum, if possible.
- 4** Interpret the sum. "____ plus ____ equals ____."

5. Sierra had $\frac{1}{4}$ of a pint of water left in her water bottle. She poured another $\frac{1}{2}$ of a pint more water into her bottle. How much water does Sierra have?

6. Theodore bought $\frac{2}{3}$ of a pound of apples and $\frac{1}{5}$ of a pound of oranges.
How much fruit did he buy?

CFU

- 1** How did I/you determine what the question is asking?
- 2** How did I/you determine the math concept required?
- 3** How did I/you determine the relevant information?
- 4** How did I/you solve and interpret the problem?
- 5** How did I/you check the reasonableness of the answer?

Solving Math Problems

- 1 Determine what the question is asking.**
- 2 Determine the math concept required.**
- 3 Determine relevant information.**
- 4 Solve the problem, then interpret the answer.**
- 5 Check the reasonableness of your answer.**

5. Sherry bought $\frac{3}{4}$ of a pound of milk chocolate and $\frac{1}{2}$ of a pound of white chocolate. How much more milk chocolate than white chocolate does Sherry have?

Sherry has ____ of a pound more _____ than _____.

6. Tom bought $\frac{2}{3}$ of a pound of cauliflower and $\frac{1}{5}$ of a pound of celery. How much more cauliflower than celery did he buy?

Tom bought ____ of a pound more _____ than _____.

CFU

- 1** How did I/you determine what the question is asking?
- 2** How did I/you determine the math concept required?
- 3** How did I/you determine the relevant information?
- 4** How did I/you solve and interpret the problem?
- 5** How did I/you check the reasonableness of the answer?

To **add fractions**, both fractions must have like denominators.

1 *Adding fractions will help solve real-life problems.*

$\frac{1}{2}$ of one pie was left over after the party. There was $\frac{1}{4}$ of another pie left over. How much pie is there?



$$\frac{1}{2} + \frac{1}{4} = \frac{3}{4}$$

There is $\frac{3}{4}$ of a pie left.

2 *Subtracting fractions will help solve real-life problems.*

$\frac{1}{2}$ of the pie was left over after the party. Erick just ate $\frac{1}{4}$ of the pie.

How much pie is left?



$$\frac{1}{2} - \frac{1}{4} = \frac{1}{4}$$

There is $\frac{1}{4}$ of the pie left.

To **add fractions**, both fractions must have **like denominators**.

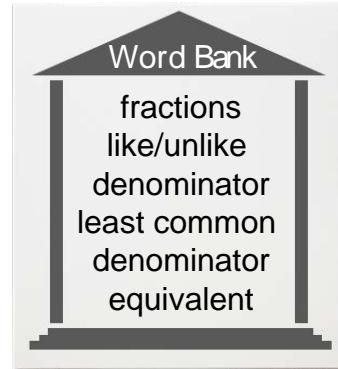
Skill Closure

Add fractions with unlike denominators.

- ① Find the least common denominator. Hint: Find the lowest shared multiple.
- ② Create equivalent fractions with like denominators.
Hint: Use the least common denominator.
- ③ Add fractions. Hint: Add the numerators, keep the denominators the same.
- ④ a Reduce the sum, if possible.
- ④ Interpret the sum. " _____ plus _____ equals _____."

1. $\frac{3}{4} + \frac{1}{8} =$

2. Carmen bought $\frac{3}{4}$ of a pound of grapes and $\frac{2}{8}$ of a pound of nectarines. How many pounds of fruit did Carmen buy?



Access Common Core

Which pair of fractions is ready to be added? Explain your answer.

A $\frac{3}{4} + \frac{3}{7} =$ B $\frac{3}{4} + \frac{1}{4} =$

Summary Closure

What did you learn today about adding fractions with unlike denominators?

(Pair-Share) Use words from the word bank.

Day 1 _____

Day 2 _____

To **subtract fractions**, both fractions must have **like denominators**.

Skill Closure

Subtract fractions with unlike denominators.

- ① Read the problem and identify fractions, if necessary. (circle)
- ② Find the least common denominator. Hint: Find the lowest shared multiple.
- ③ Create equivalent fractions with like denominators.
Hint: Use the least common denominator.
- ④ Subtract fractions. Hint: Subtract the numerators, keep the denominators the same.
 - a Reduce the difference, if possible.
- ⑤ Interpret the difference. “ minus equals .”

1. $\frac{3}{4} - \frac{1}{8} =$

2. Carmen bought $\frac{3}{4}$ of a pound of grapes and $\frac{1}{2}$ of a pound of nectarines.
How many more pounds of nectarines than grapes did Carmen buy?

Carmen bought of a pound more than .

Access Common Core

Which pair of fractions is ready to be subtracted? Explain your answer.

A $\frac{3}{5} - \frac{1}{6} =$ B $\frac{3}{4} - \frac{1}{4} =$

Summary Closure

What did you learn today about subtracting fractions with unlike denominators? (Pair-Share) Use words from the word bank.

Day 1 _____

Day 2 _____

Word Bank

fractions
like/unlike
denominator
least common
denominator
equivalent

To add fractions, both fractions must have **like denominators**.

Add fractions with unlike denominators.

- ① Find the least common denominator. Hint: Find the lowest shared multiple.
- ② Create equivalent fractions with like denominators.
Hint: Use the least common denominator.
- ③ Add fractions. Hint: Add the numerators, keep the denominators the same.
- ④ a Reduce the sum, if possible.
- ④ Interpret the sum. " _____ plus _____ equals _____."

$$1. \frac{1}{6} + \frac{2}{3} =$$

$$2. \frac{3}{8} + \frac{3}{12} =$$

3. The Smith family bought some pizzas. One pizza had $\frac{2}{7}$ left over. The other had $\frac{1}{4}$ left. How much pizza is there left over?
-
-

To **subtract fractions**, both fractions must have **like denominators**.

Subtract fractions with unlike denominators.

- ① Read the problem and identify fractions, if necessary. (circle)
- ② Find the least common denominator. Hint: Find the lowest shared multiple.
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Hint: Use the least common denominator.
- ④ Subtract fractions. Hint: Subtract the numerators, keep the denominators the same.
 - a Reduce the difference, if possible.
- ⑤ Interpret the difference. “____ minus ____ equals ____.”

$$1. \frac{5}{6} - \frac{2}{3} =$$

$$2. \frac{3}{8} - \frac{3}{12} =$$

3. The Smith family bought a pizza. Jason ate $\frac{2}{7}$ of the pizza and Jamie ate $\frac{1}{4}$ of the pizza. How much more pizza did Jason eat than Jamie?

_____ ate ____ of a pizza more than _____.

$$1. \frac{7}{12} + \frac{1}{4} =$$

$$2. \frac{3}{6} + \frac{3}{12} =$$

3. Geoff has $\frac{3}{4}$ of a pound of cashews and buys $\frac{1}{6}$ of a pound of pecans. How many pounds of nuts does he have?
-
-

Access Common Core

Anita added the fractions below. Her teacher, Mrs. Caudill, says that her answer is incorrect. Explain the mistake that Anita made.

$$\frac{10}{12} + \frac{1}{4} = \frac{11}{16}$$

$$1. \frac{11}{12} - \frac{1}{4} =$$

$$2. \frac{3}{6} - \frac{4}{12} =$$

3. Geoff has $\frac{3}{4}$ of a pound of cashews and buys $\frac{1}{6}$ of a pound of pecans. How many more pounds of cashews does he have than pecans?

Geoff has _____ of a pound more _____ than _____.

Access Common Core

Abdul subtracted the fractions below. His teacher, Mrs. Treadwell, says that his answer is incorrect. Explain the mistake that Abdul made.

$$\frac{10}{12} - \frac{1}{4} = \frac{9}{8}$$

1. $\frac{3}{6} + \frac{3}{8} =$

2. $\frac{3}{10} + \frac{1}{4} =$

Access Common Core

For each addition problem, place a check mark in the box to classify the sum as less than $\frac{1}{2}$ or greater than $\frac{1}{2}$.

$\frac{3}{6} + \frac{1}{8} =$

$\frac{1}{3} + \frac{1}{9} =$

$\frac{3}{4} + \frac{1}{12} =$

$\frac{1}{6} + \frac{4}{5} =$

$\frac{1}{4} + \frac{1}{5} =$

less than $\frac{1}{2}$	greater than $\frac{1}{2}$

1. $\frac{4}{6} - \frac{3}{8} =$

2. $\frac{9}{10} - \frac{1}{4} =$

Access Common Core

Horatio added the fractions below. Some of his answers are incorrect. Circle all the incorrect answers and write the correct solutions.

$\frac{7}{8} - \frac{3}{4} = \frac{1}{8}$

$\frac{2}{10} - \frac{1}{5} = \frac{1}{10}$

$\frac{5}{6} - \frac{1}{2} = \frac{2}{6}$

$\frac{3}{8} - \frac{1}{5} = \frac{2}{3}$

$\frac{2}{3} - \frac{1}{4} = \frac{1}{6}$

$\frac{6}{10} - \frac{2}{5} = \frac{4}{5}$

$\frac{3}{6} - \frac{1}{2} = \textcircled{O}$

$\frac{5}{10} - \frac{2}{5} = \frac{1}{5}$

$\frac{3}{4} - \frac{1}{2} = \frac{1}{4}$

$\frac{4}{5} - \frac{4}{10} = \textcircled{O}$

$\frac{3}{8} - \frac{1}{4} = \frac{1}{8}$

$\frac{3}{4} - \frac{1}{8} = \frac{5}{8}$

1. $\frac{7}{12} + \frac{1}{4} =$

2. $\frac{3}{5} + \frac{3}{10} =$

Access Common Core

Choose Yes or No to show whether each choice represents the sum of $\frac{9}{12} + \frac{1}{8}$.

$\frac{7}{8}$ Yes No

$\frac{10}{24}$ Yes No



1. $\frac{11}{12} - \frac{3}{4} =$

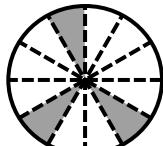
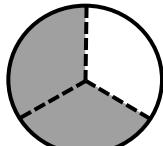
2. $\frac{3}{5} - \frac{3}{10} =$

Access Common Core

Choose Yes or No to show whether each choice is equal to the difference of $\frac{10}{12} - \frac{4}{8}$.

$$\frac{8}{24}$$
 Yes No

$$\frac{6}{4}$$
 Yes No

 Yes No Yes No